

## **ABSTRACT**

A noninvasive method and system are provided for assessing the performance of implanted actuators of semi or fully-implantable hearing aid systems. The invention utilizes an externally positioned test measurement device to obtain  
5 measurements of the electrical impedance of an implanted actuator when driven by a test signal of predetermined characteristics. In one embodiment, the test measurement device may comprise a signal generator for generating the test signal for the actuator, a signal processing unit to compute the electrical impedance from voltage and current measurements, and a user interface to  
10 provide an output that is usable to assess the performance of the actuator. The electrical impedance is computable from the voltage and current of the signal passing through the actuator. The electrical impedance is directly related to the mechanical impedance present at the interface between the actuator and middle ear of a patient. As such, by driving the actuator at one or more predetermined  
15 frequencies the resultant voltage and current measurements may be utilized to assess whether the implanted transducer is operative and whether a desired interface between the transducer and the middle ear of patient (e.g. the ossicular chain) is present.